

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

ANDREW M. HATCH ET AL.

Serial No.: 10/763,438

Filed: January 23, 2004

For: CLEANER COMPOSITION FOR FORMED METAL
ARTICLES

Group Art Unit: 1761

Examiner: Lorna M. Douyon

Attorney Docket No.: HSTI 0135 PUS1/H50006HST

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Gary Rochfort, one of the inventors of the above-identified application hereby declare the following:

1. I have been a Research Scientist at Henkel Corporation, (hereinafter, Henkel) since 1985 and am responsible for research and development in chemical processing and compositions for aluminum and steel containers for beverages and food. I have worked in this technical field for more than 20 years.

2. Prior to working at Henkel, I was employed by Monsanto Co. as a Post-doctoral Research Associate. I obtained a PhD in Organometallic Chemistry from the University of Minnesota in 1982 and did post-doctoral research at the University of Nebraska.

3. I am knowledgeable regarding beverage and food container manufacturing from formation of the containers from metal stock to filling and sealing of the containers, as well as typical transport and storage conditions during the process. The manufacturing process typically includes metal forming (meaning shaping a metal workpiece into a container shape), cleaning, surface conditioning, decorating, lacquering, filling and sealing.

4. Based on my education and background, I believe I am an individual who has at least ordinary skill, and in all likelihood more than ordinary skill, in cleaning compositions for metal articles, in particular in the metal container art area.

5. The present invention is directed to providing an improved cleaning composition for cleaning metal surfaces, such as for cans made of aluminum and aluminum-containing alloys, during the manufacturing process, after the metal forming step and before further processing.

6. As set forth in the background of the application, cans and other containers made of aluminum and alloys thereof, as a result of their forming operation, often contain lubricants, forming oils and residual aluminum fines on the metal surfaces; aluminum fines include small particles stuck to the container, for example, by being embedded in the container surface and/or entrapped in the lubricant or forming oil. The present invention is directed at providing a cleaning composition for removing these types of materials.

7. The prior art does not disclose, teach or suggest the claimed cleaning composition for formed metal articles. Due to the demands of this cleaning process, the prior art has used very different cleaning compositions than what is being claimed. As set forth in the background of the application, chromic acid or salts thereof have been previously utilized in can cleaning technologies. However, concerns regarding safety of the hexavalent and trivalent chromium compounds contained therein and the resultant waste disposal problem created by the presence of chromium in the cleaner effluent makes these types of cleaners undesirable for use.

8. Several prior art metal cleaning compositions contain nonylphenol ethoxylates and rosin ethoxylates. Both of these chemicals have relatively recently come under governmental scrutiny and are regulated in several countries. Nonylphenol ethoxylates degrade to produce nonylphenols in waste treatment streams and sludges and nonylphenols are suspected of being endocrine disruptors. Rosin ethoxylates do not meet biodegradability standards in many countries. Moreover, high performance cleaners that include rosin ethoxylates tend to be somewhat expensive.

9. Other acidic cleaners are known which omit chromates, nonylphenols, and rosins, but fall short in detergency, stability of the cleaner concentrate and/or are excessively foaming.

10. After considerable research, applicants invented a suitable low cost cleaning composition for use in industrial can washers on formed metal containers that has the requisite detergency, is stable, safe, low foaming, and has improved biodegradability. Neither the *Li* nor the *Yianakopoulos* reference would be considered a useful starting point by a skilled person seeking to make an acidic cleaner that is low-foaming enough for use in an industrial can washer.

11. *Li* is not analogous to the present invention. As set forth throughout *Li* (see Col. 1, ll. 8-12, and Col. 2, ll. 66 through Col. 3, l. 36), *Li* teaches a lubricating composition to lubricate containers and/or conveyors - not a cleaning composition for cleaning metal surfaces, such as for cans made of aluminum and aluminum-containing alloys.

12. *Li* is directed to a PET-compatible, anti-microbial lubricant composition, which is not directed to the same field of endeavor as Applicant. A lubricant is very different from a metal cleaner. The lubricant composition of *Li*, contrary to a cleaning composition, must remain on the metal material to provide a lubricating effect. It is not removed to provide a cleaning effect. Moreover, the lubricant composition of *Li* is used during the conveying and filling of the containers. In contrast, the present invention is used to clean metallic articles, such as containers, after the metal forming step and before other products are applied to the can in order to present a metal surface with minimal organic contaminants and fines.

13. *Li* is not directed to the particular problem with which the invention is involved. As set forth above, Applicants endeavored to provide a suitable low cost cleaning composition for formed metal that has the requisite detergency, is stable, safe, low foaming, and has improved biodegradability while avoiding undesirable materials like hexavalent chromium, nonyl phenol ethoxylate and rosin ethoxylate compounds. *Li* is directed to providing a lubricant that stays on the conveyor or container and is compatible with the PET container and beverages. (Col. 3, ll. 2-6.) *Li* has nothing to do with the problem the inventors are solving and teaches use of ethoxylated alkyl phenols, which include nonyl phenol ethoxylates.

14. *Li*'s pH of 3 provides 90% fewer moles of hydrogen ions than applicants' pH of 2. pH is measured on a logarithmic scale. As a result, each whole pH value below 7 is ten times more acidic than the next higher value. For example, pH 2 is 10 times more acidic than pH 3 and 100 times (10 times 10) more acidic than pH 4. Contrary to the Patent Office' conclusion, a pH 3 composition is 90% less acidic than a pH 2 composition resulting in different properties, for example, etch rate and ionic strength.

15. The usages of the claimed composition and *Li*'s composition are for entirely different purposes and at entirely different stages of the container utilization process. The composition of the present invention is used prior to the filling operation such that when the container is filled, it will be sufficiently clean. Whereas, the composition of *Li* is used during the filling operation after it has already been cleaned.

16. *Li*'s composition cannot be considered to be substantially similar to the claimed composition. *Li*'s primary ingredient is a quaternary phosphonium compound. Such a component is not found in Applicants' composition and is not considered needed or suitable for use in an industrial cleaner such as Applicants' composition. The low pH of Applicants' composition make this antimicrobial compound unnecessary. Due to the presence of the quaternary phosphonium compound it would not be reasonable to expect the *Li* composition to give a similar water-break free result.

17. Even using *Li*, as a starting point, it would not have been obvious to select a specific surfactant combination from the broadly recited group of *Li*'s surfactants. There is no suggestion, in the prior art to select the specific claimed surfactant combination from *Li*'s broadly recited list. *Li* in stating that "one or more surfactants may be used" does not make it obvious to provide a combination of nonionic surfactants in their optimum proportions wherein one contains a 40 mole ethoxy group and the other with a lower ethoxy group. There is no teaching in *Li* to provide such a combination.

18. The skilled person is not choosing from a finite number of identified and predictable solutions to the problem. The list of surfactants from references cited by the Patent Office is extensive. It was not routine experimentation to arrive at the claimed composition, particularly where our own results in the examples of the application show that the performance of surfactants is unpredictable.

19. *Li*'s broad statement that "one or more than surfactants may be used" would not lead one of ordinary skill in the art at the time of the invention to select the claimed components in the claimed proportions. *Li* is directed to a lubricant – not a metal cleaner. *Li*'s invention has nothing to do with providing Applicants' type of composition.

20. *Yianakopoulos* is not analogous to the present invention. *Yianakopoulos*, which is assigned to Colgate-Palmolive, teaches an all-purpose household liquid detergent designed to protect surfaces from acid attack. One of skill in the art would expect this household detergent to be non-metal etching in order to protect household metal surfaces, such as plumbing fixtures. *Yianakopoulos* specifically teaches "an anti corrosion system to protect acid-sensitive surfaces", which directly contradicts Applicants' need for a certain amount of acid etching to remove metal fines.

21. *Yianakopoulos* is not directed to the same field of endeavor as Applicant. As discussed above, *Yianakopoulos* discloses all-purpose household liquid detergents, which recites

a long list of potential surfactants, including nonylphenol ethoxylates. In contrast, the present invention is used to clean metallic articles, such as containers, in an industrial can washer at high agitation, which requires specific combinations of surfactants to avoid foaming and phase separation. Cleaning compositions for household liquid detergents act very differently than cleaning compositions for metal surfaces, such as cans made of aluminum and aluminum-containing alloys. Foaming in household detergents and *Yianakopoulos* is considered desirable, see Col. 15 line 50-54. *Yianakopoulos* does not recognize the problem of foaming in industrial spray cleaners and does not distinguish between foamy and non-foamy surfactants. Instead, *Yianakopoulos* suggests adding silicone for "objectionable foaming"; silicone is known in the container art to cause label and coating adhesion failure.

22. *Yianakopoulos* does not disclose, teach or suggest a cleaning composition comprising an ethoxylate of an alcohol having 12 to 25 carbon atoms and 10 to 41 mole ethoxylate and another nonionic surfactant different from the first and it would not have been obvious to do so in view of *Yianakopoulos*. Applicants' invention is a specific composition which provides a desired result as a cleaning composition for formed metal articles. The skilled person is not choosing from a finite number of identified and predictable solutions to the problem. It was not routine experimentation to arrive at the claimed composition, particularly where our own results show that the performance of surfactants is unpredictable.

23. As the examples show, the cleaner composition for metal surfaces is an unpredictable art. The results show that Applicants, who are quite skilled in the can cleaner art, did not find predictability in achieving the combination of features sought, specifically, water break free, low foam, and little re-deposition of the soil on the cans.

24. I acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. § 1001) and may jeopardize the validity of the application or any patent issuing thereon.

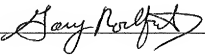
25. I acknowledge that all statements made are of my own knowledge and are true and that all statements are made on information believed to be true.

26. I declare (or certify, verify, or state) under penalty of perjury.

Respectfully submitted,

GARY ROCHFORD

Date: 15-Dec. 2011

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